OER Recommendations to Support Lifelong Learning

1 Purpose

In recent decades, we have faced a significant gap between the supply of learning content what educational systems offer, and what individuals actually need to learn to be able to carry out their daily (including job-related and social-related) activities [1], [2]. The COVID-19 pandemic intensified this challenge as due to the dramatic, and often existential situation of businesses in a number of industries, forced people to reskill themselves online in order to remain employable in post-COVID times [3]. For instance, skills that are important in offering online services (e.g. software development and delivery), or soft skills related to online collaboration and communication, are extremely demanded on the labor market and expected to play key roles in the near future. Due to these changes and the economical situation in the COVID time, many people around the world lost their jobs and need to reskill themselves to (re)gain their jobs. As a consequence, lifelong learners need to monitor and update their individual skill-sets regularly to remain employable [4], [5]. Subsequently, educational systems should be developed, which consider individual learning objectives context, and preferences in order to provide personal and relevant learning recommendations. To build such a personalized context-aware system, a large amount of educational resources with various properties (e.g. language, expertise level, and format type) is required. In this context, Open Educational Resources (OERs) can play a significant role as they are open and free to use content that can be adapted to different learning needs. However, the applicability of OERs in this area has been limited due to the lack of intelligent methods to facilitate OER quality control [6] and property extraction [7] processes. Subsequently, without these automated methods, essential services like high-quality learning content recommendation or OER search services still underperform [8], [9]. In this research, therefore, we want to:

1. Propose a method that facilitates the utilization of information on skills for learning processes, based on timely labor market information.

2. Decompose those skills into meaningful learning objectives and components and offer an individualized learning path.

3. Build a personalized OER recommendation system that helps learners to achieve their skill targets through recommended learning pathways.

2 Design

Firstly, we built a dynamic job-skill matching component by text-mining online job vacancies [10]. Consequently, we created a topic extractor method that decomposes a skill into knowledge topics by collecting a large amount of OERs for that skill [7]. Afterward, we developed an OER management component which 1. collects OERs from different repositories, 2. classifies them according to their target subjects using our topic extractor component, and 3. validates the quality of their metadata and content using [11]. Finally, we created an OER recommender system that receives the learners' goals and offers personalized educational resources to help learners achieve those target goals. To offer personalized materials, we ask a few questions in the registration time to store the learners' preferences (e.g., regarding different educational format types and languages). Afterward, during the learning process, learners can rate their satisfaction after completing each recommended OER which helps our system to capture any changes in the users' preferences.

3 Results

Based on our developed components, we built a prototype dashboard called eDoer (http://edoer.eu), in which learners can search for their target jobs and skills, display the list of required/related skills, and select their learning goals among the lists. After that, the system creates a learning path and provides personalized OERs for learners to help them achieve their goals. We did a preliminary validation for our dashboard in the Business Analytics course at the University of Amsterdam, and the evaluation results showed that the students who used our prototype achieved higher grades than those who did not use it.

4 Implications

This study is expected to empower lifelong learners to be able to autonomously work on their skill development. Moreover, the automatic quality control component helps authors in validating the quality of their resources. OER repositories and service providers are also able to collect OERs with high-quality metadata and content and subsequently, offer recommendation and search services. These services help learners spend less time and effort to find related, high-quality OERs which we expect to facilitate the use of OERs soon.

5 References

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